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Explanation of Significant Differences:

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IDAHO DEPARTMENT OF HEALTH AND WELFARE

DIVISION OF ENVIRONMENTAL QUALITY

INEEL

Explanation of Significant Differences

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Environmental Cleanup Office

Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13

Idaho National Engineering and Environmental Laboratory
Idaho Falls, Idaho

Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13

Idaho National Engineering and Environmental Laboratory

Introduction

This Explanation of Significant Differences (ESD) applies to the comprehensive Record of Decision (ROD) for the Test Reactor Area (TRA) at the Idaho National Engineering and Environmental Laboratory (INEEL) in Idaho Falls, Idaho. The ROD was signed in December 1997 by the United States Department of Energy Idaho Operations Office (DOE-ID), the United States Environmental Protection Agency (EPA) Region 10, and the Idaho Department of Health and Welfare.

This ESD, prepared in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Code of Federal Regulations (CFR) 40 CFR 300.435(c)(2)(I), documents significant differences to the selected remedies in the ROD. In summary,. this ESD clarifies the institutional control requirements for individual sites within this ROD and establishes the general requirements the DOE will apply to ensure effective institutional controls for these individual sites. The Idaho Department of Health and Welfare supports the need for this ESD.

This ESD will become part of the INEEL administrative record. The INEEL administrative record is available to the public at the following locations:

INEEL Technical Library
DOE Public Reading Room
1776 Science Center Drive
Idaho Falls, ID 83415
(208) 526-1185

Albertsons Library
Boise State University
1910 University Drive
Boise, ID 83725
(208) 385-1621

University of Idaho Library
University of Idaho Campus
434 2nd Street
Moscow, ID 83843
(208) 885-6344

Summary of Site History, Contamination Problems, and Selected Remedy

The INEEL, managed by the DOE, is a government facility located 32 mi (51 km) west of Idaho Falls, Idaho, and occupies 890 mi^2 (2,305 km^2) of the northeastern portion of the Eastern Snake River Plain. The TRA is in the west-central portion of the INEEL.

Facilities at the INEEL are primarily dedicated to nuclear research. development, and waste management. Surrounding areas are managed by the Bureau of Land Management for multipurpose use. The developed area within the INEEL is surrounded by a 5-mi^2 (13-km^2) buffer zone used for cattle and sheep grazing. Communities nearest to the TRA are Atomic City (south), Arco (west), Butte City (west), Howe (northwest), Mud Lake (northeast), and Terreton (northeast). The county land surrounding the INEEL is approximately 45% agricultural, 45% open land, and 10% urban. Sheep, cattle, hogs, and poultry are produced; and potatoes, sugar beets, wheat, barley, oats, forage, and seed crops are cultivated. Most land surrounding the INEEL is owned by private individuals or the United States government.

The TRA was established in the early 1950s for studying radiation effects on materials, fuels, and equipment. Three major reactors have been built at the TRA, including the Materials Test Reactor, the Engineering Test Reactor, and the Advanced Test Reactor. The Advanced Test Reactor is currently the only major operating reactor at the TRA. Approximately 420 people are employed at the TRA.

Public access to the INEEL is strictly controlled by fences and security personnel. State Highways 22, 28, and 33 cross the northeastern portion of the INEEL approximately 20 mi (32 km) away, and U.S. Highways 20 and 26 cross the southern portion approximately 5 mi (8 km) away. Ninety miles (145 km) of paved highways pass through the INEEL and are used by the general public.

The Snake River Plain Aquifer, the largest potable aquifer in Idaho, underlies the Eastern Snake River Plain and the INEEL. The aquifer is approximately 200 mi (322 km) long, 20 to 60 mi (32 to 97 km) wide, and covers an area of approximately 9,600 mi^2 (25,000 km^2). The depth to the aquifer varies from approximately 200 ft (61 m) in the northeastern comer of the INEEL to approximately 900 ft (274 m) in the southeastern corner, a distance of 42 mi (68 km). Depth to groundwater is approximately 480 ft (146 m) below TRA. Drinking water for employees at TRA is obtained from production wells in the northeastern part of the facility.

To better manage environmental investigations, the INEEL is divided into ten waste area groups (WAGs). Within the TRA WAG (WAG 2), 55 known or suspected contaminant release sites were identified, 47 of which were recommended for no action. All remedial action is completed on the action sites and cleanup standards have been met per the ROD.

The remedial action objectives are summarized in Appendix A. The major components of the remedies selected in the ROD are summarized in Appendix B, particularly as they relate to institutional controls. The ROD has a full description of the selected remedies.

Description of the Significant Differences and the Basis for Those Differences

The TRA ROD, December 1997, includes institutional controls and the underlying land assumptions that were part of the ROD decision. It lacks details on the site-specific institutional controls including the geographic locations where institutional controls are required, the objectives of the control or restriction and a description of the types of restrictions. The ROD does not discuss how these institutional controls will be implemented, maintained, and monitored, both while the DOE has control of the property as well as if and when the property is transferred to other federal ownership or private ownership. This ESD preserves the underlying land assumption, clarifies the site-specific institutional control requirements, and establishes the requirement for how the DOE will implement, maintain, and monitor these site-specific institutional controls. The proposed changes to the TRA ROD do not alter the scope and performance of the remedies and do not noticeably change the cost.

The INEEL decided that an ESD to the TRA ROD is necessary to clearly identify any land or groundwater currently unavailable for free and unlimited use, and to commit to preserving the underlying assumptions of the remedial investigation/feasibility study (RI/FS) that support this ROD. These assumptions are that (1) the INEEL would be used only for industrial purposes for at least the next 100 years, (2) after 100 years, a resident would not dig any deeper than 10 feet, and (3) drinking-water wells would not be drilled while the land is used for industrial purposes for the next 100 years.

Site-Specific Institutional Control Requirements

Appendix B contains the revised site-specific institutional control requirements for every site and remedy listed in Appendix A that includes any form of institutional controls. These revised requirements clarify the geographic location of each institutional control, the objective of the control or restriction. and, as appropriate, a description of the types of necessary restrictions. Appendix C includes some additional risk calculations that were done in addition to the RI/FS. The results of these calculations are referred to in Appendix B.

Facilitywide Institutional Control Requirements

Facility-wide institutional control requirements (Appendix D) establish the procedures or processes that the INEEL will use to develop, implement, and monitor the site-specific institutional controls.

The remedial requirements described in Appendices B and C should result in remedial actions that improve the short-term and long-term protectiveness of human health and the environment.

The applicable or relevant and appropriate requirements established in the RODs are not modified by this ESD. This ESD is in furtherance of a new requirement, the EPA Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities, May 3, 1999.

State Agency Comments

The Idaho Department of Health and Welfare has reviewed this ESD and supports these changes to the selected remedy.

Public Participation

The INEEL will publish a notice of availability and a brief description of this ESD in the local newspaper (the Idaho Falls Post Register) and six other Idaho newspapers. The INEEL community relations office may be contacted at 208-526-4700 or 1-800-708-2680.

Affirmation of the Statutory Determinations

After reviewing the proposed changes to the selected remedies, the DOE, EPA, and the Idaho Department of Health and Welfare believe that the remedies remain protective of human health and the environment, comply with federal and state requirements identified in the ROD as applicable or relevant and appropriate to these remedial actions at the time of the original ROD, and are cost-effective. In ,addition, permanent solutions and alternative treatment technologies are included in the revised remedies to the maximum practicable extent.

References

DOE-ID, 1996, *Idaho National Engineering Laboratory Comprehensive Facility and Land Use Plan*, U.S. Department of Energy Idaho Operations Office, DOE/ID-10514, March.

DOE-ID, 1997a, *Final Record of Decision for Test Reactor Area Operable Unit 2-13*, U.S. Department of Energy Idaho Operations Office, DOE/1D-10586, December.

DOE-ID, 1997b, *Comprehensive Remedial Investigation/Feasibility Study for the Test Reactor Area Operable Unit 2-13 at the Idaho National Engineering and Environmental Laboratory*, U.S. Department of Energy Idaho Operations Office, DOE/ID- 10531, February.

DOE-ID, 1998a, *Groundwater Monitoring Plan for the Test Reactor Area Operable Unit 2-13*, U.S. Department of Energy Idaho Operations Office, DOE/ID-10626, June.

DOE-ID, 1998b, *Final Comprehensive Remedial Design/Remedial Action Work, Plan for the Test Reactor Area,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10643, September.

EPA, 1999, *Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities,* Memorandum from Director, Office of Environmental Cleanup, Director, Office of Waste and Chemicals Management, Director, Office of Regional Counsel to Office Environmental Cleanup, Office of Waste and Chemicals Management, Office of Regional Counsel, May.

INEEL, 1995, *Work Plan for Waste Area Group 2 Operable Unit 2-13 Comprehensive Remedial Investigation/Feasibility Study,* U.S. Department of Energy Idaho Operations Office, INEL-94/0026, April.

Appendix A

A Summary of the Remedial Action Objectives

Appendix A

A Summary of the Remedial Action Objectives

Remedial action objectives (RAOs) for Test Reactor Area (TRA) Operable Unit (OU), 2-13 were developed in accordance with the National Contingency Plan (NCP) and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedial investigation/feasibility study (RI/FS) guidance. The RAOs were defined through discussions among agencies Idaho Department of Health and Welfare (IDHW), Environmental Protection Agency (EPA), and the United States Department of Energy (DOE). The RAOs are based on the results of the human health risk assessment and are specific to the contaminants of concern (COCs) and exposure pathways developed for OU 2-13. They are as follows:

For protection of human health-

- Inhibit direct exposure to radionuclide COCs that would result in a total excess cancer risk of greater than 1 in 10,000 to 1,000,000 (1E-04 to 1E-06) to current and future workers and future residents.

- Inhibit ingestion of radionuclide and nonradionuclide COCs by all affected exposure routes (including soil and groundwater ingestion, and ingestion of homegrown produce) that would result in a total excess cancer risk of greater than 1 in 10,000 to 1,000,000 (1E-04 to 1E-06) or a hazard index greater than 1 to current and future workers and future residents.

- Inhibit degradation of any low-level radioactive soil (e.g., Warm Waste Pond 1952 and 1957 cell covers) that would result in exposure to buried waste or migration of contaminants to the surface that would pose-a total excess cancer risk (for all contaminants) of greater than 1 in 10,000 to 1,000,000 (1E-04 to 1E-06) or a hazard index greater than 1 to current and future workers and future residents.

For protection of the environment-

- Inhibit adverse effects to resident populations of flora and fauna, as determined by thp ecological risk evaluation, from soil, surface water, or air containing COCs.

- Inhibit adverse effects to sites where COCs remain in-place below ground surface that could result in exposure to COCs or migration of COCs to the surface.

The ROD selected remedies are included in Table B-1.

Appendix B

Revised Site-Specific Institutional Control Requirements

Appendix B

Site-Specific Institutional Control Requirements

Table B-1. Sites with remedies requiring institutional controls at Waste Area Group (WAG) 2.[a]

Site Code	Site Name	Record of Decision (ROD) Selected Remedy	Basis for Institutional Controls[b]	Institutional Controls[c]
TRA-03	TRA Warm Waste Pond (sediments)	Containment with an engineered soil cover and institutional controls	Containment barrier is in place. Current occupational risk is 2E-02. 100-yr futureresidential risk is >1E-04.	Restrict site to occupational access for more than 30 years and restrict to industrial land use only until residential risk is <1E-04 based on the results of a 5-year review.
TRA-06	TRA Chemical Waste Pond (TRA-701)	Containment with a native soil cover and institutional controls	Native soil cover in place. Hazard quotient greater than 1 for mercury via homegrown produce ingestion and soil ingestion at a depth of 14 feet.	Industrial land use is unrestricted land use to depths less than 14 feet.
TRA-08	TRA Cold Waste Disposal Pond (TRA-701)	Excavation and disposal	Soil excavated and disposed of to 1E-04 future residential risk cleanup levels. Institutional controls needed to preserve 100-year industrial land use assumption.	Restrict site to industrial land use for less than 100 years until residential risk is <1E-04 based on the results of a 5-year review.
TRA-13	TRA Sewage Leach Ponds (2) by TRA-732	Containment with a native soil cover and institutional controls	Containment barrier is in place. Current occupational risk is 1E-03 for Cs-137 and Ag-108. 100-year residential risk is 5E-04 at a depth of 14 feet. The hazard quotient is greater than 1 for mercury and zinc via homegrown produce ingestion.	Restrict site to occupational access for more than 30 years and restrict to industrial land use only until residential risk is <1E-04 based on the results of a 5-year review.

Table B-1. (continued).

Site Code	Site Name	Record of Decision (ROD) Selected Remedy	Basis for Institutional Controls[b]	Institutional Controls[c]
TRA- 15	TRA Hot Waste Tanks 2, 3, 4 at TRA-613 (TRA 713-B, 713-C, and 713-D)	Limited action	Tanks still in use. Current occupational risk 3E-04; 100-year future residential risk is 1E-04. Additional contaminated soil is greater than 13 feet. Risk assessment not done at this depth. Additional institutional controls needed to preserve assumption that deeper soil would never be assessed.	Restrict occupational and residential access for less than 100 years until risk is <1E-04 based on a 5-year review. After the above restriction land use at depths greater than 10 feet until otherwise evaluated.
TRA-19	TRA Rad Tanks 1 and 4 at TRA-630, replaced by Tanks 1, 2, 3, and 4 (TRA 730-1, 730-2, 730-3, 730-4)	Limited action with implementation of a contingent excavation and disposal option	New tanks still in use. Current occupational risks is 2E-01 for Cs-137. 100-year residential risk is 8E-02.	Restrict occupational access and prohibit residential development until soil is removed or status is changed based on results of a 5-year review.
None	Sewage Leach Pond Soil Contamination Area	Limited action	2E-04 current occupational risk; 30-year occupation risk and 100-year residential risk is <1E-04.	Restrict occupational and residential access until risk is <1E-04 based on results of a 5- year review.
None	Brass Cap Area	Limited action with implementation of a contingent excavation and disposal option	3E-01 current occupational risk and 8E-02 30-year future occupational risk. 8E-02 100-year future residential risk.	Restrict occupational access and prohibit residential development until contamination is removed or status is changed based on a 5-year review.

a. Information source is DOE-ID 1997b.

b. With the exception of TRA-08, all risks are preremediation risks developed in the baseline risk assessment (DOE-ID 1997b).

c. Timeframes are approximate. Duration of controls will be based on acceptable levels or risk.

Table B-2. No-action sites requiring institutional controls at WAG 2.

Site Code	Site Name	ROD Selected Remedy	Basis for Institutional Controls[a]	Institutional Controls
None	TRA PCB spill at TRA-619	No action	22 ppm polychlorinated biphenyl (PCBs) in soil under pad, which is below the 25 ppm for restricted industrial areas and greater than the 10 ppm for general nonrestricted use (40 Code of Federal Regulations (CFR) 761.125(c)(4). Institutional controls needed to preserve industrial land use assumption.	Permanently restrict this site to industrial land use only, unless otherwise indicated in a 5-year review.
None	TRA PCB spill at TRA-626	No action	24 ppm PCBs in soil >4 feet deep, which is below the 25 ppm for restricted industrial areas and greater than the 10 ppm for general nonrestricted use (40 CFR 761.125 (c)(4)). Institutional controls needed to preserve industrial land use assumption.	Permanently restrict this site to industrial land use only, unless otherwise indicated in a 5-year review.
None	TRA PCB spill at TRA-653	No action	PCBs #25ppm in soil, which is below the 25 ppm for restricted industrial areas and greater than the 10 ppm for general nonrestricted use (40 CFR 761.125(c)(4)). Institutional land use controls needed to preserve industrial land use assumption.	Permanently restrict this site to industrial land use only, unless otherwise indicated in a 5-year review.

Table B-2. (continued).

Site Code	Site Name	ROD Selected Remedy	Basis for Institutional Controls[a]	Institutional Controls
TRA-04	TRA Warm Waste Retention Basin, surficial sediments (TRA-712)	No action	5E-04 current residential risk for 10 feet and less. Risk evaluation not done for contamination at 40 feet deep. Institutional controls needed to preserve 100-year industrial land use assumption and assumption that deeper soil would never be accessed.	Restrict site to industrial use only for less than 10 feet deep. Restrict land use for deeper contamination until evaluated otherwise.
TRA-34	TRA North Storage Area	No action	3.5E-05 100-year residential risk. 1.2E-04 current residential risk for silver-108m, cesium-137, and europium-152. Institutional controls needed to preserve 100-year industrial land use assumption.	Restrict land use to industrial until residential risk is less than E-04 based on a 5-year review.
None	Hot Tree Site	No Action	2E-04 current residential risk from cesium-137. 2E- 05 risk after 100 years.	Restrict site to industrial land use only for approximately 30 years until residential risk is less than E-04 based on the results of a 5-year review.
None	Perched and Snake River Aquifer groundwater	No action, with monitoring	Chromium concentrations are greater than maximum contaminant levels (MCLs) and are predicted to decrease below MCLs within 20 years. H-3 concentrations are below MCLs. Institutional controls needed to preserve the assumption that drinking-water wells would not be drilled.	Restrict drilling of wells for drinking water use until contaminants are below MCLs based on the results of a 5-year review.

a. Information source is DOE-ID 1997a, DOE-ID 1997b, and Appendix C of this document.

Table B-3. Institutional control requirements for WAG 2.

Timeframe	Land Restriction[a]	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
TRA-03 Warm Waste Pond. The site is a low-level waste landfill containing radiologically contaminated soil. An engineered barrier was constructed over the site. Total risk for the residential scenario is projected to diminish to 1E-04 in approximately 1,000 years.					
Current DOE operations	Landfill—no unauthorized intrusion into capped area	Radionnuclides —exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavating) 3. Publication of surveyed boundaries and descriptions of controls in the INEEL Land Use Plan (DOE-ID 1996)	Federal Facility Agreement and Consent Order (DOE-ID 1991) Worker protection (10 CFR 839) Radiation protection of the public and as low as reasonably achievable principles (DOE Order 5400.5) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA [42 USC 9620 § 120(H)]
DOE control post-operations (i.e., after operations cease)	Landfill—no unauthorized intrusion into capped area	Radionuclides—exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavating) 3. Property lease requirements including control of land use consistent with the WAG 2 ROD and this ESD 4. Notice to affected stakeholders (e.g., Bureau of Land Management, Sho-Ban Tribal Council, local county governments, IDHW, and the EPA) for any change in land-use designation , restriction, or land users	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(5)][b] Hall Amendment of the National Defense Authorization Act[c] (Public Law 103-160) Property release restrictions (DOE Order 5400.5)

Table B-3. (continued).

Timeframe	Land Restriction	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Post-DOE control	Landfill—no unauthorized intrusion into capped area	Radionuclides—exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	1. Property transfer requirements including issuance of a finding of suitability to transfer and control of land use consistent with the WAG 2 ROD and this ESD	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(3)][d] CERCLA [42 USC 9620 § 120(h)(3)(C)(ii)] [c] CERCLA [42 USC 9620 § 120(h)(3)(A)(iii)][f] CERCLA [42 USC 9620 § 120(h)(1)-(3)][g]
				2. Notice to affected stakeholders (e.g., Bureau of Land Management Sho-Ban Tribal Council, local county governments, IDHW, and the EPA) for any change in land-use designation, restriction, or land users	CERCLA [42 USC 9620 § 120(h)(4)][h] Property relinquishment notification (43 CFR 2372.1)[l] Criteria for Bureau of Land Management acceptance of property 43 CFR 2374.2[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7) Property release restrictions (DOE Order 5400.5)

Table B-3. (Continued).

Timeframe	Land Restriction	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
TRA -13 Sewage Leach Pond. The site is a low-level waste landfill containing radiologically contaminated soil. A native soil cover was placed over the site. Total risk for the residential scenario is projected to diminish to 1E-04 in approximately 500 years.					
Current DOE operations	Landfill—no unauthorized intrusion into capped area	Radionuclides—exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	1. Visible access restrictions (warning signs) 2. Controls of activities (drilling or excavating) 3. Publication of surveyed boundaries and descriptions of controls in the INEEL Land Use Plan.	Federal Facility Agreement and Consent Order (DOE-ID 1991) Worker protection (10 CFR 835) Radiation protection of the public and as low as reasonably achievable principles (DOE Order 5400.5) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA [42 USC 9620 § 120 (h)]
DOE control post operations (i.e., after operations cease)	Landfill—no unauthorized intrusion into capped area	Radionuclides—exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	1. Visible access restrictions (warning signs) 2. Controls of activities (drilling or excavating) 3. Property lease requirements including control of land use consistent with the WAG 2 ROD and this ESD 4. Notice to affected stakeholders (e.g., Bureau of Land Management, Sho-Ban Tribal Council, local county governments, IDHW, and the EPA) for any change in land-use designation, restriction, or land users	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(5)][b] Hall Amendment of the National Defense Authorization act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)

Table B-3. (Continued)

Timeframe	Land Restriction	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Post-DOE control	Landfill—no unauthorized intrusion into capped area	Radionuclides—exposure to subsurface soil and buried waste	Maintain integrity of containment barrier	1. Property transfer requirements including issuance of a finding of suitability to transfer and control of land use consistent with the WAG 2 ROD and this ESD 2. Notice to affected stakeholders (e.g., Bureau of Land Management, Sho-Ban Tribal Council, local county governments, IDHW, and the EPA) for any change in land-use designation, restriction, or land users	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 § 120 (h)(3)][d] CERCLA [42 USC 9620 § 120 (h)(3) (C)(ii)][e] CERCLA [42 USC 9620 § 120 (h)(3) (A) (iii)][f] CERCLA [42 USC 9620 § 120 (h)(1)-(3)][g] CERCLA [42 USC 9620 § 120 (h)(4)][h] Property relinquishment notification (43CFR 23.72.1)[i] Criterion for BLM acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements 941 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)

Table B-3. (continued).

Timeframe	Land Restriction	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Sewage Leach Pond Soil Contamination Area. Current occupational scenario risk estimates are greater than 1E-04. Controls will be maintained to protect workers and prevent residential development until residential risk estimate is less than 1E-04 in approximately 100 years.					
Current DOE orerations	Industrial	Radionuclides—external raidiation	Limit exposure to contaminated soil.	1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavating)	Federal Facility Agreement and Consent Order (DOE-ID 1991) Worker protection (10 CFR 835) Radiation protection of the public and as low as reasonably achievable principles (DOE Order 5400.5) National Oil and Hazardoous Substanced Pollution Control Plan (40 CFR Part 300) CERCLA [42 USC 9620 § 120(h)]

Table B-3. (continued)

Timeframe	Land Restriction[a]	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
TRA-15 Soil Around tanks and TRA-04 Warm Waste retention Basin, Surficial Sediments. These sites have low-level radiologically contaminated soil. Total risk for the residential scenario is projected to diminis to 1E-04 in approximately 100 years for top 10 ft of TRA-15 and undetermined for deeper soils of TRA-15 and TRA-04.					
Current DOE operations	Industrial	Radionuclides—external radiation	Limit exposure to contaminated soil	1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavating)	Federal Facility Agreement and Consent Order (DOE-ID 1991) Worker protection (10 CFR 835) Radiation protection of the public and as low as reasonably achievable principles (40 CFR 835) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA [42 usc 9620 § 120(h)]
DOE control post-operations (i.e., after operations cease	Industrial	Radionuclides—external radiation	Limit exposure to contaminated soil.	1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavation) 3. Property lease requirements including control of land use consistent with the WAG 2 ROD and this ESD	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 §120(h)(5)][b] Hall Almendmint of the National Defense Authorization Act (Public Law 103–160)[c] Property release restrictions (DOE Order 5400.5)

Table B-3. (continued).

Timeframe	Land Restriction[a]	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Post-DOE control	Industrial	Radionuclides—external radiation	Limit exposure to contaminated soil	Property transfer requirements including issuance of finding of suitability to transfer and control of land use consistent with the WAG 2 ROD and this ESD.	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(3)[d]] CERCLA [42 USC 9620 § 120(h)(3)(C)(ii)][e] CERCLA [42 USC 9620 § 120(h) (3)(A)(iii)][f] CERCLA [42 USC 9620 § 120(h)(1)-(3)][g] CERCLA [42 USC 9620 § 120(h)(4)][h] Property relinquishment notification (43 CFR 2372.1)[l] Criterion for BLM acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)

Table B-3. (continued).

Timeframe	Land Restriction[a]	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
TRA-19 Soil Around Tanks and Brass Cap Area. These sites have low-level radiologically contaminated soil. Controls will be maintained to protect workers until the soil is removed or status is changed.					
Current DOE operations	Industrial	Radionuclides—external radiation	Limit exposure to contaminated soil	1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavating)	Federal Facility Agreement and Consent Order (DOE-ID 1991) Worker protection (10 CFR 835) Radiation protection of the public and as low as reasonably achievable principles (DOE Order 5400.5) National Oil and Hazardous Substances Pollution Control Plan 940 CFR Part 300) CERCLA [42 USC 9620 § 120(h)]
DOE control post operations (i.e., after operations cease)	Industrial	Radionuclides—external radiation	Limit exposure to contaminated soil	1. Visible access restrictions (warning signs) 2. Control of activities (drilling or excavation) 3. Property lease requirements including control of land use consistent with the WAG 2 ROD and this ESD	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 § 120 (h)(5)][b] Hall Amendment of the National Defense Authorization Act (Public Law 103-106)[c] Property release restrictions (DOE Order 5400.5)

Table B-3. (continued).

Timeframe	Land Restriction[a]	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Post-DOE control	Industrial	Radionuclides **C** external radiation	Limit exposure to contaminated soil	Property transfer requirements including issuance of finding of suitability to transfer and control of land use consistent with the WAG 2 ROD and this ESD.	Federal Facility Agreement and Consent Order (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(3)[d]] CERCLA [42 USC 9620 § 120(h)(3)(C)(ii)][e] CERCLA [42 USC 9620 § 120(h) (3)(A)(iii)][f] CERCLA [42 USC 9620 § 120(h)(1)-(3)][g] CERCLA [42 USC 9620 § 120(h)(4)][h] Property relinquishment notification (43 CFR 2372.1)[l] Criterion for BLM acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)

Table B-3. (continued).

Timeframe	Land Restriction[a]	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Groundwater. Contaminants in groundwater exceed maximum contaminant levels (MCLs). Controls will be maintained to prevent consumption and use of groundwater until contaminants are below MCLs in approximately 30 years.					
Current DOE operations	Groundwater use	Tritium, Chromium	Prevent consumption of groundwater that is greater than MCLs	1. Control of activities 2. Publish estimated conservative boundaries in INEEL Land Use Plan	Federal Facility Agreement and Consent Order (DOE-ID 1991 Worker protection (10 CFR 835) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA [42 USC 9620 § 120(h)] Federal Facility Agreement and Consent Order (DOE-ID 1991)
DOE control post-operations (i.e., after operations cease)	Groundwater use	Tritium, Chromium	Prevent consumption of groundwater that is greater than MCLs	1. Control of activities 2. Property lease requirement including control of land use consistent with the WAG 2 ROD and this ESD	CERCLA [42 USC 9620 § 120 (h)(5)][b] Hall Amendment of the National Defense Authorization Act (Public Law 103-106)[c] Property release restrictions (DOE Order 5400.5)
TRA-06 Chemical Waste Pond. The site has mercury 14 feet below grade. A native soil cover was placed over the site. The hazard index is greater than for the residential scenario at 14 feet below grade and is not expected to diminish.					
DOE control post-operations (i.e., after operations cease)	Limited residential	Mercury ! residential exposure	Limit residential land use	1. Visible access restrictions (warning signs) 2. Property lease requirements including control of land use consistent with the WAG 2 ROD and this ESD	FFA/CO (DOE-ID 1991) CERCLA [42 USC 9620§ 120(h)(5)][b] Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)

Table B-3 (continued).

Timeframe	Land Restriction[a]	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Post-DOE control	Limited residential	Mercury—residential exposure	Limit residential land use	Property transfer requirements including issuance of finding of suitability to transfer and control of land use consistent with the WAG 2 ROD and this ESD.	FFA/CO (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(3)[d]] CERCLA [42 USC 9620 § 120(h)(3)(C)(ii)][e] CERCLA [42 USC 9620 § 120(h) (3)(A)(iii)][f] CERCLA [42 USC 9620 § 120(h)(1)-(3)][g] CERCLA [42 USC 9620 § 120(h)(4)][h] Property relinquishment notification (43 CFR 2372.1)[1] Criterion for BLM acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)
TRA-08 Cold Waste Disposal Pond, TRA-34 North Storage Area, and Hot Tree Site. Risk estimates for current residential scenario are greater than 1E-04. Institutional controls will be maintained for approximately 30 years for TRA-34 and Hot Tree Site, and approximately 100 years fo TRA-08 or sooner if the site is released in a 5-year review					
DOE control post-operations (i.e., after operations cease)	Industrial	Radionuclides—minimal concern	Control land use as industrial until residential risk is less than 1E-04 in 30 years or sooner if released in a 5-year review.	Property lease requirements including control of land use consistent with the WAG 2 ROD and this ESD	Federal Facility Agreement and Consent order (DOE-ID 1991) CERLCA [42 USC 9620 § 120 (h)(5)][b] Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)

Table B-3. (continued).

Timeframe	Land Restriction[a]	Exposure Concern	Objective	Controls	Regulatory Basis or Authority
Spill at TRA-619, TA-626, and TRA-653. Buried contaminated soil remains at these three sites.					
DOE control post-operations (i.e., after operation cese)	Industrial	Polychlorinated biphenyls (PCBs)	Control land use as industrial	Property lease requirements including control of land use consistent with the WAG 2 ROD and this ESD	Federal Facility Agreement and Consent Order (DOE-ID 1991) Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5) CERCLA [42 USC 9620 § 120(h))]
Post-DOE control	Industrial	PCBs	Ensure land use is appropriate	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use consistent with the WAG 2 ROD and this ESD.	Federal Facility Agreement and Consent Oder (DOE-ID 1991) CERCLA [42 USC 9620 § 120(h)(5)][b] Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)

a. Institutional controls apply only to sites where hazardous substances, pollutants, or contaminants preclude unlimited land use. Surveillance will be conducted every 5 years to ensure that controls are in place.

b. Notification to states of leases involving contamination. Concurrence of U.S. EPA is requested on leases of National Priorities List (NPL) (54 FR 48184) sites.

c. Consult with EPA and request the agency's concurrence for leases of sites that are on the NPL.

d. A statement that remedial action is complete is required in the deed.

e. If response action for which the federal government is responsible is not complete, restrictions, the response guarantee, the schedule for investigation and completion of all necessary response actions, and budget assurances must be included in the deed.

f. A clause allowing the U.S. government access to the property must be included in the deed.

g. A notice of information about hazardous substances on the property must be included in the deed.

h. Uncontaminated parcels of land must be identified and concurred with by the EPA administrator before termination of operations.

i. A Notice of Intent with contamination information and protection needs is required before the property is relinquished to the U.S. Department of Interior.

j. Transfer to the U.S. Department of Interior must indicate continuation of DOE responsibility.

k. k. Report to the General Services Administration on contamination information and allowable land use for excess real property.

Appendix C

Current Residential Risk

APPENDIX C

Current Residential Risk

Table C-1. Residential risk summary.[a, b]

		TRA-04 Human Cancer Risk	TRA-34 Human Cancer Risk	Hot Tree Site Human Cancer Risk
Acrylonitrile				
	100-yr Future	5.E-05 (5 in 100,000)	1.E-06 (1 in 1,000,000)	1.E-06 (1 in 1,000,000)
	30-yr Future	5.E-05 (5 in 100,000)	1.E-06 (1 in 1,000,000)	1.E-06 (1 in 1,000,000)
	Current	5.E-05 (5 in 100,000)	1.E-06 (1 in 1,000,000)	1.E-06 (in 1,000,000)
Arsenic				
	100-yr Future	3.E-05 (3 in 100,000)		
	30-yr Future	3.E-05 (3 in 100,000)		
	Current	3.E-05 (3 in 100,000)		
Beryllium				
	100-yr Future	1E-05 (1 in 100,000)	---	---
	30-yr Future	1.E-05 (1 in 100,000)		
	Current	1.E-05 (1 in 100,000)	---	---
Silver-108m				
	100-yr Future		3.E-05 (3 in 100,000)	
	30-yr Future		4.E-05 (4 in 100,000)	
	Current		5.E-05 (5 in 100,000)	
Cobalt-60				
	100-yr Future			
	30-yr Future	5.E-06 (5 in 1,000,000)		
	Current	3.E-04 (3 in 10,000)	2.E-05 (2 in 100,000)	2.E-05 (2 in 100,000)
Cesium-137				
	100-yr Future	1.E-05 (1 in 100,000)	5.E-06 (5 in 1,000,000)	2.E-05 (2 in 100,000)
	30-yr Future	5.E-05 (5 in 100,000)	1.E-05 (1 in 100,000)	1.E-05 (1 in 10,000)
	Current	1.E-04 (1 in 10,000)	5.E-05 (5 in 100,000)	2.E-04 (2 in 10,000)
Europium-152				
	100-yr Future	---		---
	30-yr Future	---	2E-05 (2 in 100,000)	---
	Current	---	9E-05 (9 in 100,000)	—

Table C-1. (continued).

		TRA-04 Human Cancer Risk	TRA-34 Human Cancer Risk	Hot Tree Site Human Cancer Risk
Uranium-238				
	100-yr Future	2.E-06 (2 in 1,000,000)	---	---
	30-yr Future	2.E-06 (2 in 1,000,000)	---	---
	Current	2.E-06 (2 in 1,000,000)	---	---
Total Risks				
	100-yr Future	1.E-04 (1 in 10,000)	4E-05 (4 in 100,000)	2E-05 (2 in 100,000)
	30-yr Future	2E-06 (2 in 10,000)	7E-05 (7 in 100,000)	1E-04 (1 in 10,000)
	Current	5E-06 (5 in 10,000)	2E-04 (2 in 10,000)	2E-04 (2 in 10,000)

a. Source of 30-year and 100-year risk information is DOE-ID 1997b.

b. Only risks greater than 1 in 1,000,000 are included.

Appendix D

Facilitywide Institutional Control Requirements

Appendix D

Facilitywide Institutional Control Requirements

A comprehensive approach for establishing, implementing, enforcing, and monitoring institutional controls will be developed in accordance with Environmental Protection Agency (EPA) "Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities" (May 1999). The following elements for waste area group (WAG) 2 institutional controls will be developed in the operation and maintenance (O&M) plan and will involve a facilitywide land use plan and procedures for controlling activities as outlined in the policy:

- A comprehensive facilitywide list of all WAG2 areas or locations covered by any and all decision documents at the facility that have or should have institutional controls for protection of human health or the environment. The information on this list will include, at a minimum, the location of the area, the objectives of the restriction or control, the timeframe that the restrictions apply, and the tools and procedures that the facility will use to implement the restrictions or controls and to evaluate the effectiveness of the restrictions or controls.

- Cover, and legally bind where appropriate, all entities and persons, including, but not limited to, employees, contractors, lessees, agents, licensees, and invitees. In areas where the facility is aware of routine trespassing, trespassers must also be covered.

- Cover all activities and reasonably anticipated future activities, including, but not limited to, any future soil disturbance, routine and nonroutine utility work, well placement and drilling, recreational activities, groundwater withdrawals, paving, training activities, construction, renovation work on structures or other activities.

- A tracking mechanism that identifies all land areas under restriction or control.

- A process to promptly notify both EPA and the State prior to any anticipated change in land use designation, restriction, land users, or activity for any institutional control required by a decision document.

Within six months of signature of this ESD, a monitoring report on the status of institutional controls at WAG 2 will be submitted to the EPA and Idaho Department of Health and Welfare. An updated institutional control monitoring report will be submitted to the EPA and Idaho Department of Health and Welfare at least annually thereafter. After the facility's comprehensive facilitywide approach is well established and the facility has demonstrated its effectiveness, the frequency of future monitoring reports may be modified subject to approval by EPA and the State. The institutional control monitoring report will contain at a minimum:

- A description of how DOE is meeting the facilitywide institutional control requirements

- A description of how DOE is meeting the WAG 2 specific objectives, including results of visual field inspections of all areas subject to WAG 2 specific restrictions

- An evaluation of whether or not all the WAG specific and facilitywide institutional control requirements are being met

- A description of any deficiencies and the efforts or measures that have been or will be taken to correct problems.

EPA and State review of the institutional control monitoring report will follow existing procedures for agency review of documents.

The DOE will notify EPA and the State immediately upon discovery of any activity that is inconsistent with the WAG specific institutional control objectives, or of any change in the land use or land use designation of a site addressed in the WAG 2 list of areas or locations covered by institutional controls. DOE will work together with EPA and the State to determine a plan of action to rectify the situation except in the case where DOE believes the activity creates an emergency situation, the DOE can respond to the emergency immediately upon notification to EPA and the State and need not wait for EPA or State input to determine a plan of action. DOE will also identify what went wrong with the institutional control process, evaluate how to correct the process to avoid future problems, and implement these changes after consulting with EPA and the State.

DOE will identify a point of contact for implementing, maintaining, and monitoring institutional controls.

DOE will notify EPA and the State at least six (6) months prior to any transfer, sale or lease of any property subject to institutional controls required by an EPA decision document so that EPA and the State can be involved in discussions to ensure that appropriate provisions are included in the conveyance documents to maintain effective institutional controls. If it is not possible for DOE to notify EPA and the State at least six months prior to any transfer, sale or lease, then DOE will notify EPA and the State as soon as possible but no later than 60 days prior to the transfer, sale, or lease of any property subject to institutional controls.

DOE will not delete or terminate any institutional control unless EPA and the State have concurred in the deletion or termination.